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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,974	06/28/2006	Walter Doll	62367-393106	5879
27510	7590	03/03/2011		
KILPATRICK TOWNSEND & STOCKTON LLP			EXAMINER	
1100 Peachtree Street			ZHANG, JUE	
Suite 2800				
ATLANTA, GA 30309			ART UNIT	PAPER NUMBER
			2838	
			NOTIFICATION DATE	DELIVERY MODE
			03/03/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/552,974

Applicant(s)

DOLL ET AL.

Examiner

JUE ZHANG

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/7/2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25, 27-34, 39-51 and 53-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25, 27, 34, 39-42, 53-59, and 64-65 is/are rejected.
- 7) ☒ Claim(s) 28-33, 43-51 and 60-63 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of Priorities Cited (PTO-502)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office action is in answer to the after final amendment filed on 2/7/2011.

Claims 25, 27-34, 39-51, 53-65 are pending, of which claims 34, 53, 54 are amended by the present amendment.

Response to Amendment

2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1,148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 25, 27, 34, 39-40, 55-57, and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Single (AU200176077, hereinafter '077), in view of Nanno et al. (US Patent No. 5553294, hereinafter '294)

Claim 25. '077 teaches a method of managing the supply of power to an output circuit of an implantable hearing prosthesis (e.g., see Fig. 1-3) comprising a plurality of rechargeable batteries, the method comprising the steps of:

converting, with an input voltage converter circuit, a supply voltage to a battery voltage (e.g., the battery charging means for charging the selected battery, see lines 1-8, 26-29, page 12; lines 9-12, page 18; Fig. 3);

selectively connecting, using a switch matrix, a desired one of the plurality of rechargeable batteries to the input voltage converter circuit to charge the desired one of the plurality of batteries (e.g., see lines 1-8, 26-29, page 12; lines 9-12, page 18; lines 21-24, page 28; Fig. 3); and

connecting a selected one of the plurality of rechargeable batteries, using the switch means matrix, to the output circuit to enable the selected one of the batteries to be discharged through the output circuit (e.g., see lines 3-11, page 24; line 18 page 25 to line 16 page 26; lines 24-27, page 27; lines 9-12, page 18; Fig. 3).

'077 does not explicitly disclose the step of converting, with the voltage converter circuit, the voltage output from the selected one of the batteries to a voltage for use by the output circuit.

'294 discloses a voltage converter circuit (e.g., 315, Fig. 2) converts battery voltage to an output voltage suitable for power the output load circuit (e.g., see col. 5, lines 57-62; Fig. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the voltage converter circuit to include the voltage conversion means to further connect the output circuit, as disclosed in '294, because it converts the voltage of the selected battery to the supply voltage needed by load circuit (e.g., see col. 5, lines 57-62; Fig. 2).

Claim 34, '077 teaches an implantable hearing prosthesis (e.g., see Fig. 1-3) comprising:

- an output circuit (e.g., 20, Fig. 1); and

- a power management system (e.g., see lines 22-33 of page 17; Fig. 3)

configured to supply power to the output circuit comprising:

- a plurality of rechargeable batteries (e.g., see lines 24-26 of page 9; lines 9-13, 17-18 of page 18; Fig. 3);

a voltage converter circuit configured to convert a supply voltage to a battery voltage (e.g., the battery charging means for charging the selected battery, see lines 1-8, 26-29, page 12; lines 9-12, page 18; Fig. 3); and

a switch matrix configured to selectively connect a desired one of the batteries to the voltage converter circuit for charging of the desired one of the batteries (e.g., see lines 1-8, 26-29, page 12; lines 9-12, page 18; lines 21-24, page 28; Fig. 3) and to selectively connect a selected one of the (batteries) to the output circuit to enable the selected one of the batteries to be discharged through the output circuit (e.g., see lines 3-11, page 24; line 18 page 25 to line 16 page 26; lines 24-27, page 27; lines 9-12, page 18; Fig. 3).

wherein the voltage converter circuit further connects the output circuit to the switch matrix and is configured to convert the voltage of the selected one of the batteries to a voltage for use by the output circuit. (e.g., see lines 1-8, 18-28, page 12; lines 2-8, page 18; Fig. 3).

'077 does not explicitly disclose that the voltage converter circuit further connects the output circuit to the switch matrix and is configured to convert the voltage of the selected one of the batteries to a voltage for use by the output circuit.

'294 discloses a voltage converter circuit (e.g., 315, Fig. 2) converts battery voltage to an output voltage suitable for power the output load circuit (e.g., see col. 5, lines 57-62; Fig. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the voltage converter circuit to include the voltage conversion means to further connect the output circuit, as disclosed

in '294, because it converts the voltage of the selected battery to the supply voltage needed by load circuit (e.g., see col. 5, lines 57-62; Fig. 2).

Claim 55, '077 teaches a system (e.g., see Fig. 1-3) comprising:

a power supply having a first induction coil; and

an implantable hearing prosthesis (e.g., see Fig. 1-3) comprising:

a second induction coil configured to detect a varying magnetic field from the first induction coil when the first and second induction coils are in close proximity;

an output circuit (e.g., 20, Fig. 1); and

a power management system (e.g., see lines 22-33 of page 17; Fig. 3) configured to receive a supply voltage from the second induction coil and provide power to the output circuit, comprising: a plurality of rechargeable batteries (e.g., see lines 24-26 of page 9; lines 9-13, 17-18 of page 18; Fig. 3);

a voltage converter circuit configured to convert the supply voltage to a battery voltage (e.g., the battery charging means for charging the selected battery, see lines 1-8, 26-29, page 12; lines 9-12, page 18; Fig. 3); and

a switch matrix configured to selectively connect a desired one of the batteries to the conversion means for charging of the desired one of the batteries (e.g., see lines 1-8, 26-29, page 12; lines 9-12, page 18; lines 21-24, page 28; Fig. 3) and for selectively connecting a selected one of the batteries to the output circuit to enable the selected one of the batteries to be discharged through the output circuit (e.g., see lines 3-11, page 24; line 18 page 25 to line 16 page 26; lines 24-27, page 27; lines 9-12, page 18; Fig. 3),

'077 does not explicitly disclose that the voltage converter circuit further connects the output circuit to the switch matrix and is configured to convert the voltage of the selected one of the batteries to a voltage for use by the output circuit.

'294 discloses a voltage converter circuit (e.g., 315, Fig. 2) converts battery voltage to an output voltage suitable for power the output load circuit (e.g., see col. 5, lines 57-62; Fig. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the voltage converter circuit to include the voltage conversion means to further connect the output circuit, as disclosed in '294, because it converts the voltage of the selected battery to the supply voltage needed by load circuit (e.g., see col. 5, lines 57-62; Fig. 2).

Claims 27, '077 and '294 teach the limitation of claims 25 as discussed above.

'077 further teaches that wherein the switch matrix comprises: a plurality of switches having at least one switch for each of the batteries (i.e., the limitation is implicitly taught in order for the switching matrix to perform the disclosed functions)(e.g., see lines 1-8, 26-29, page 12; lines 9-12, page 18; Fig. 3).

Claims 39, 56, 64, '077 and '294 teach the limitation of claims 34 and 55 as discussed above. '077 further teaches that wherein the switch matrix comprises a plurality of switches enabling connection of the desired one of the plurality of batteries to the converter circuit and of the selected one of the batteries to the output circuit (i.e., a plurality of switches is implicitly taught in order for the switching means to perform the disclosed functions)(e.g., see lines 1-8, 26-29, page 12; lines 9-12, page 18; Fig. 3).

Claims 40, 57, '077 and '294 teach the limitation of claims 34 and 55 as discussed above. '077 further teaches that a control unit (i.e., a control unit for controlling the switch matrix for performing the functions is implicitly taught) configured to control the switch means to either enable the charging of the desired one of the plurality of batteries and the discharging of the selected one of the batteries based on the state of charge of the plurality of batteries (e.g., see lines 1-8, 26-29, 30-36, page 12; lines 12-23, page 13; Fig. 3).

7. Claims 41, 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Single (AU200176077, hereinafter '077), in view of Nanno et al. (US Patent No. 5553294, hereinafter '294), further in view of Maki (US Patent No. 6541980, hereinafter '980).

For claims 41, 58, '077 and '294 teach the limitations of claims 40 and 55 as discussed above.

'077 or '294 do not explicitly teach that a multiplexer means is used to select one terminal of each rechargeable battery in the plurality of rechargeable batteries for to be forwarded to an A/D converter. However, in an analogous art, '980 teaches a battery voltage monitoring device (Abstract; Fig. 1 and corresponding text) which uses multiplexer means (e.g., 1 or 2) to select one terminal of each rechargeable battery in the plurality of rechargeable batteries for the voltage to be measured by an A/D converter (5). Therefore, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the multiplexer means to select one terminal of each rechargeable battery in the plurality of

rechargeable batteries of '077, as taught by '980, in order to have measured the selected voltage of the batteries using the A/D converter, because '980 has demonstrated that it is a preferred method in order to have measured the selected battery voltage from multiple of batteries using an a/d converter.

8. Claims 42, 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Single (AU200176077, hereinafter '077), in view of Nanno et al. (US Patent No. 5553294, hereinafter '294), further in view of Maki (US Patent No. 6541980, hereinafter '980), and further in view of Becker et al. (US Patent No. 6271643, hereinafter '643)

For claims 42, 59, '077, '294, and '980 as discussed above except for a shunt impedance means being connected to the other terminal of each battery in the plurality of rechargeable batteries to measure the charge current of each battery, represented as a voltage drop across the shunt impedance means.

'643 discloses a battery charging circuit having a shunt impedance means (e.g., 135 of Fig. 9A, 10-26 of Fig. 18) being connected to the other terminal of the battery in the plurality of rechargeable batteries to measure the charge current of each battery, represented as a voltage drop across the shunt impedance means (e.g., see Fig. 9A, Fig. 18).

Therefore, it would have been obvious to one of ordinary skill in the art to have modified the charging circuit to include the shunt impedance means being connected to the other terminal of the battery in the plurality of rechargeable batteries to measure the charge current of each battery, represented as a voltage drop across the shunt

impedance means, as taught by '643, since it provides the increased reliability and useful life (e.g., col. 2 line 60-61).

9. Claims 53, 54, 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over (AU200176077, hereinafter '077), in view of Nanno et al. (US Patent No. 5553294, hereinafter '294), further in view of Kernahan et al. (US PG Pub No. 20040095020, hereinafter '020).

For claims 53, 54, 65, '077 and '294 teach the claimed invention as discussed above except for the voltage converter including an inductive means, one or more switches and a switch control unit to enable discharging of the selected one of the battery. '020 discloses a power converter circuit with an inductive means (e.g., the inductor 15, Fig. 1) one or more switches (e.g., 13a, 13b, Fig. 1) and a switch control unit (e.g., 11, Fig. 1) to enable for converting the battery (e.g., 10, Fig. 1) voltage to a regulated output voltage for supplying power to load (e.g., see Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the DC/DC converter circuit of '020 as the second conversion circuit of '077 and '294, as disclosed in '020, because it converts battery voltage to the output voltage for supplying power to load.

Allowable Subject Matter

10. Claims 28-33, 43-51, 60-63 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is an examiner's statement of reasons for allowance:

For claims 28-33, the prior art does not disclose or suggest, primarily, the charging of the desired one of the plurality of batteries and the discharging of the selected one of the batteries based on information on each of the rechargeable batteries stored in a register.

For claims 43-51, 60-63, the prior art does not disclose or suggest, primarily, the shunt impedance means is connected in parallel to a shunt switch to short circuit the shunt impedance means when the shunt impedance is not in use.

Response to Argument

12. Applicant's arguments filed 2/7/2011 have been fully considered but are moot in view of the new ground of rejections.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUE ZHANG whose telephone number is (571)270-1263. The examiner can normally be reached on M-Th 7:30-5:00PM EST, Other F 7:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Monica Lewis can be reached on 571-272-1838. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Monica Lewis/
Supervisory Patent Examiner, Art Unit 2838

JZ